WELCOME ABOARD
USCGC POLAR STAR

USCG
POLAR STAR WAGB-10

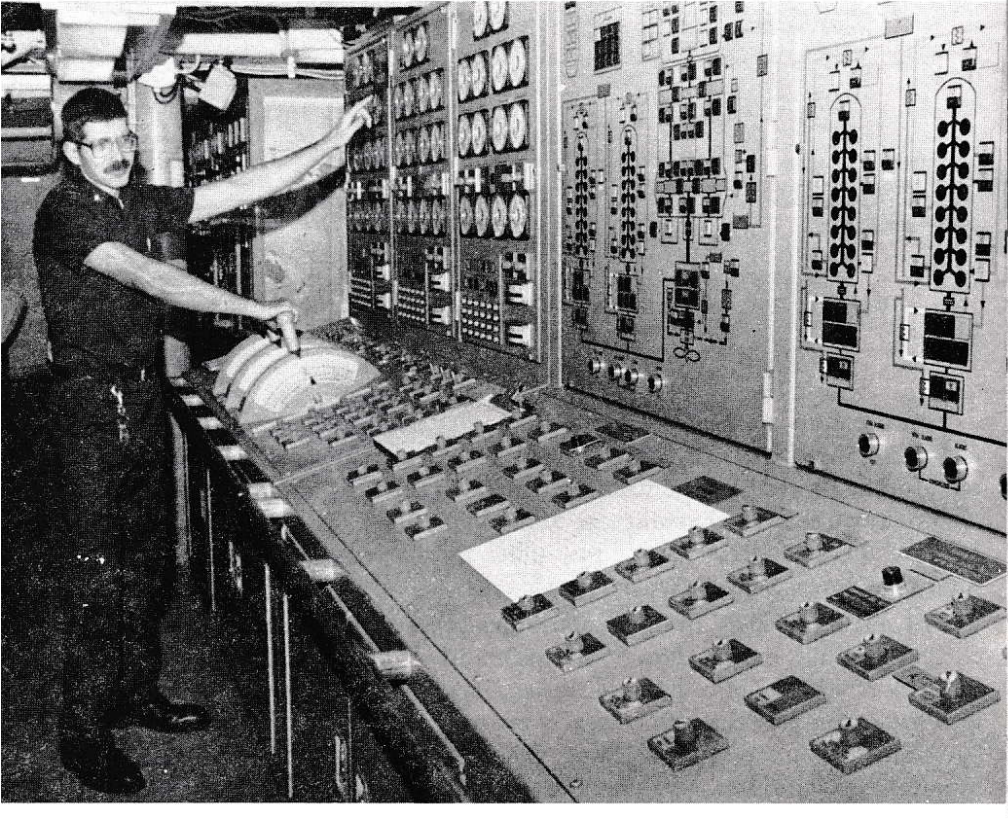
Many icebergs encountered at the frozen poles are larger than Polar Star.

You are now on board the world's most powerful conventionally powered icebreaker! USCGC POLAR STAR (WAGB 10) is the first new icebreaker to be built for the United States since 1954. The Lockheed Shipbuilding and Construction Company of Seattle, Washington, built POLAR STAR as well as her sister ship, USCGC POLAR SEA. These two sister ships operate out of the Coast Guard Support Center, Seattle, Washington.

POLAR STAR has all of the attributes of an outstanding Polar icebreaker — exceptional hull design, power, strength and weight. Her design, which resulted from three years of research and testing, incorporates a number of improved and innovative features that affect nearly every aspect of her operation. Much of her equipment is highly sophisticated. There are two digital computers, one for monitoring the ship's machinery and one for satellite navigation. To reduce manpower needs, automation and low maintenance materials have been used to the greatest extent possible.

State-of-the-art controls on POLAR STAR include a computer-controlled monitoring system that keeps watch over the equipment in the enginerooms. From the Engineering Control Center the system continuously scans and records the condition of the machinery. If a critical situation arises the system sounds an alarm and, if necessary, automatically shuts down equipment before permanent damage is done.

A successful icebreaker must have a powerful main propulsion plant. POLAR STAR's three shafts are turned by a combined diesel electric/gas turbine power plant. Each shaft is connected to a 16 foot diameter, four-bladed, controllable pitch propeller. Either the diesel electric or the gas turbine mode of propulsion can be

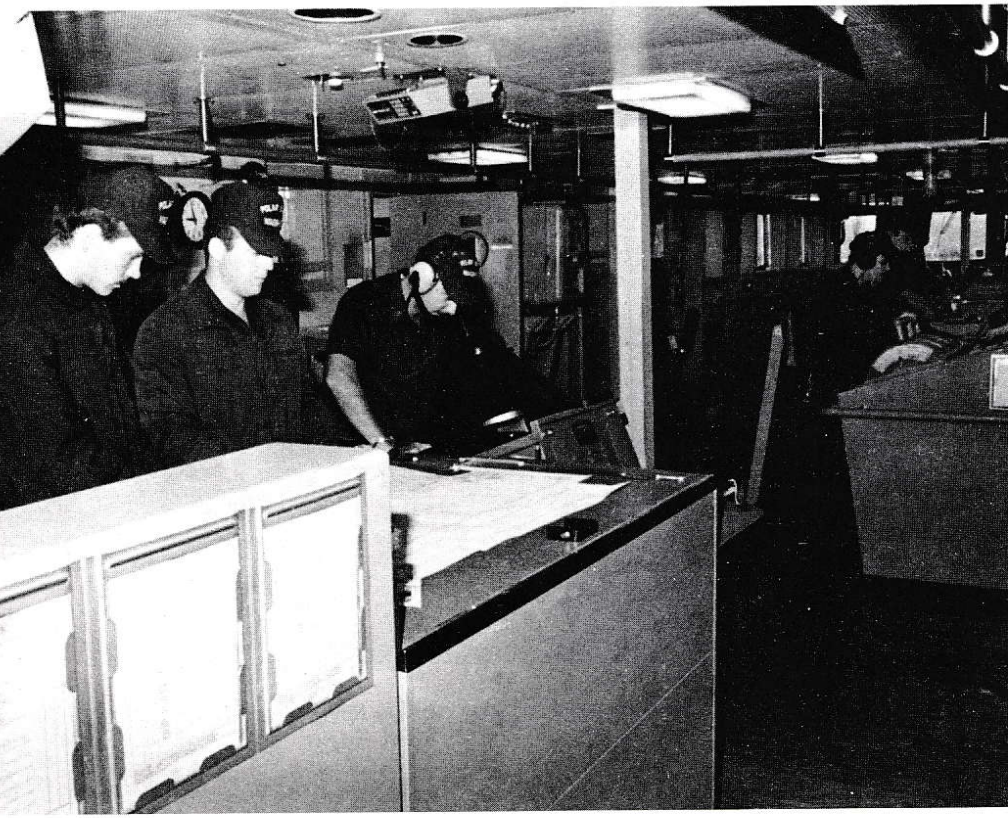


The modern engineering control panel onboard Polar Star.

used, but not both together. The diesel electric plant can produce 18,000 shaft horsepower and the gas turbine plant 60,000 shaft horsepower. So, POLAR STAR is not only modern, she is also very powerful.

POLAR STAR has sufficient hull strength to absorb high-powered rams into the ice. The shell plating and associated internal support structure are fabricated from steel that has especially good low-temperature strength. The icebelt is 1 3/4 inches thick in the bow and stern sections and 1 1/4 inches thick amidships. Although the plating may not seem very thick, her hull strength depends chiefly upon the massive internal support structure.

The hull shape of POLAR STAR is designed to maximize icebreaking by efficiently combining the forces of the ship's forward motion and the downward



The Polar Star's pilothouse sits almost six stories above the water line.

pull of gravity. POLAR STAR's curved bow allows her to ride up on top of the ice; from that point, her bow acts like a giant hammer as it smashes down through the ice.

With such a sturdy hull and high power to back it up, the 13,000 ton POLAR STAR should be able to ram her way through ice up to 21 feet thick and to steam continuously through six feet of ice at three knots! Even veteran icebreaker sailors are impressed by such numbers!

Polar Bears are a common sight in the Arctic.

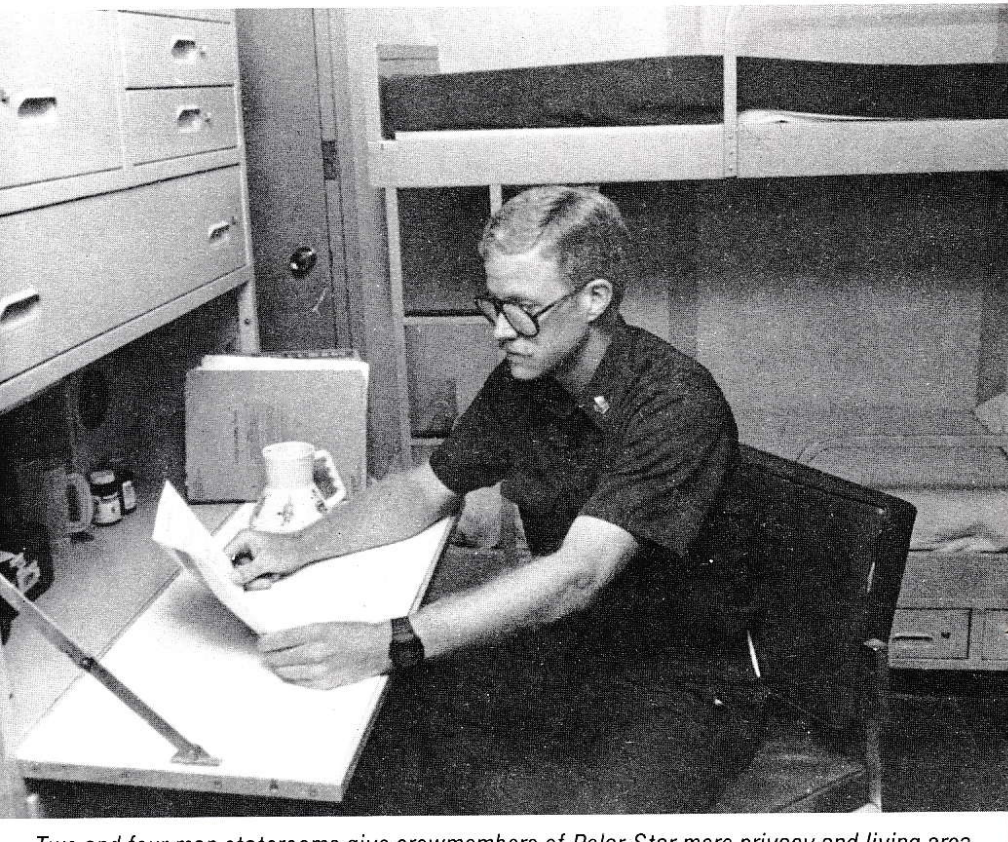
Should POLAR STAR become beset (stuck) in the ice, she is not entirely helpless. A heeling system can rock the ship to aid in breaking free from the ice. The system consists of three pairs of connected tanks on opposite sides of the ship. Pumps transfer a tank's contents (35,000 gallons) to an opposing tank in a mere 50 seconds and generate 24,000 foot-tons of torque on the ship. That goes a long way in rocking POLAR STAR loose from any tight spots she may find herself in.

Polar Star breaks through tough Antarctic ice.

To the layman, perhaps the outstanding feature of POLAR STAR is her crew's living accommodations. Duty on an icebreaker is long and strenuous, especially since it involves being away from home for up to eight months out of the year. Careful consideration has been given to the needs of POLAR STAR's crew to insure they receive the best possible care and comfort.

The crew numbers approximately 140 as compared to about 175 men for the older and smaller WIND Class icebreakers. The extra space resulting from a smaller crew on a larger ship has been put to good use. Staterooms are provided for the crew. Four sizable lounges, a library, a gymnasium, and a soda fountain are all found on the ship. Bright colors, and a modern decor differ sharply from traditional shipboard drabness. These and other points all contribute to the livability of POLAR STAR.

POLAR STAR carries 2 helicopters during major deployments. They carry out a wide variety of tasks, including: scientific party support, ice reconnaisance, cargo transfer, and, if there is a need, search and rescue. The Aviation Detachment comes from the Polar Operations Division of the Coast Guard Aviation Training Center located in Mobile, Al.



Two and four man staterooms give crewmembers of Polar Star more privacy and living area than most vessels.

Aviation is part of the polar missions, here an orange HH-52A Helicopter takes off for an ice reconnaissance flight.

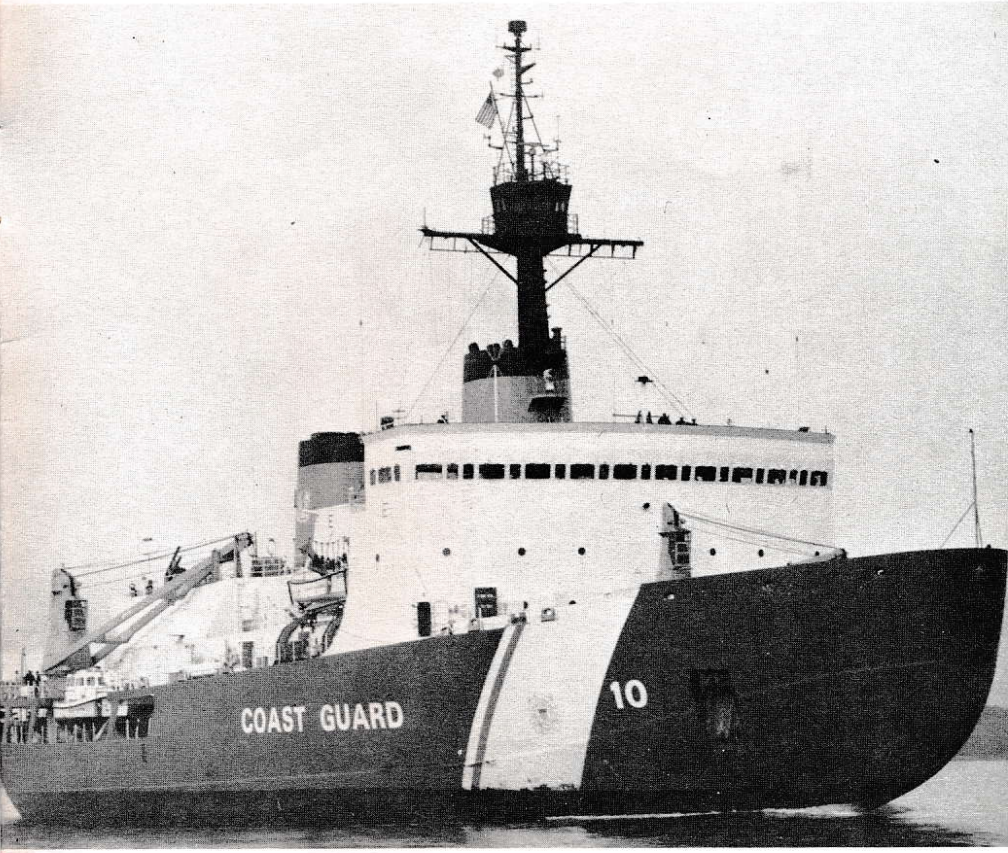
POLAR STAR has a variety of missions while operating in the polar regions. During an Antarctic deployment, also known as a DEEP FREEZE, she re-supplys Palmer Station, an American research base located on the Antarctic Peninsula. From Palmer, POLAR STAR steams 3,000 miles to the west to another American base, McMurdo Station. Once at McMurdo, she begins work on a channel through the "fast" ice (ice that is affixed to the shore). Once the channel is completed she escorts re-supply ships into the base. In addition to these duties, POLAR STAR will also serve as a scientific platform. POLAR STAR has five laboratories. She can carry up to 20 members of a scientific party, and has four permanently assigned Marine Science Technicians.

When operating in the Arctic regions, POLAR STAR again serves as a scientific platform. Her scientific missions take her into the Bering, Beaufort, and Chukchi Seas.

This pamphlet can provide you with only a very basic sketch of USCGC POLAR STAR. While you are with us, feel free to ask questions. We are proud of this great ship and will be pleased to tell you more about the Coast Guard's largest and most powerful icebreaker.

Ship's Statistics

OVERALL LENGTH	399 FEET
BEAM	83.5 FEET
DRAFT	33.5 FEET
MAST HEIGHT ABOVE BASELINE	166.1 FEET
HEIGHT OF BRIDGE ABOVE WATERLINE	55 FEET (approx.)
HEIGHT OF ALOFT CONN ABOVE WATERLINE	104 FEET (approx.)
DISPLACEMENT, CAPACITY LOAD	13,190 TONS
RANGE (MAXIMUM)	28,275 MILES
SUSTAINED SPEED (OPEN WATER)	17 KNOTS
ESTIMATED ICEBREAKING CAPABILITY	
Continuous (Gas Turbine Mode)	6' NEW HARD ICE
Continuous (Diesel Mode)	4' NEW HARD ICE
Ramming (Gas Turbine Mode)	21' NEW HARD ICE
COMPLEMENT:	14 OFFICERS, 126 ENLISTED
HELICOPTER DETACHMENT:	4 OFFECERS, 10 ENLISTED
SCIENTIFIC PARTY:	20 SCIENTISTS/TECHNICIANS



USCGC Polar Star underway near her home port in the Puget Sound.

DEPARTMENT OF TRANSPORTATION

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UNITED STATES COAST GUARD